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10/599,134	09/20/2006	Akinobu Miyazaki	14434.101USWO	4778

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EXAMINER	
ROBINSON, LAUREN E	

ART UNIT	PAPER NUMBER
1794	

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08/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,134	MIYAZAKI ET AL.	
	Examiner	Art Unit	
	LAUREN ROBINSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being obvious over Mitsui et al. (US Pub. 2003/0129546) in view of Mito et al. (US PN. 6,589,894).

Consider claim 1: Mitsui et al. teach a dielectric paste and the method of making a plasma display comprising the dielectric paste (abstract). They also teach that the plasma display is a panel as illustrated by the figures within the reference (0019). Further, they teach that the panel is also comprised of a display electrode and an address electrode wherein the dielectric layer is formed on the display electrode (0068). Also, the dielectric layer is comprised of a glass powder (0056) which can be comprised of a mixture that can contain 6 wt% silica, 20 wt% boron oxide, 20 wt% zinc oxide, 38 wt% bismuth oxide and 4 wt% alumina (0105). However, they disclose that powder mixtures such as the one above for the same purpose within the reference can have 4 to 40 wt% zinc oxide and 10 to 85 wt% bismuth oxide (0058). Further, the reference does not disclose the need for lead oxide in the layer and therefore, this corresponds to the applicants' claim that 0 wt% PbO can be present. Although the above teaching is disclosed, the reference *is silent regarding a specific composition comprising the elements above wherein zinc oxide and bismuth oxide being within the claimed amount,*

and that an RO compound according to the applicants' claim being within a mixture of all of the above compounds within the percentage range claimed.

Consider a *specific composition comprising the above silica, boron oxide, alumina, zinc oxide and bismuth oxide wherein zinc oxide and bismuth oxide are within the claimed ranges when specifically in the above composition.*

While the reference clearly illustrates an example of a composed glass powder comprising 6 wt% silica, 20 wt% boron oxide, 20 wt% zinc oxide, 38 wt% bismuth oxide and 4 wt% alumina which the examiner notes that not all of the above materials are present within the applicants' claimed ranges, the examiner notes that the teaching within the reference that the powder composition of the invention preferably has 4 to 40 wt% zinc oxide and 10 to 85 wt% bismuth oxide would make one of ordinary skill in the art recognize that although the specific example does not have zinc oxide and bismuth oxide being in the applicants' claimed ranges within the example, the compounds are capable of being present in an amount within the broad taught ranges wherein the examiner notes that the broad ranges of the zinc oxide and boron oxide overlap the applicants' claimed amounts. Therefore, while the reference does not specifically teach an example that includes all the applicants' materials being together in a single composition in the claimed amounts, one would recognize that the zinc oxide and bismuth oxide could be present in those amounts.

Also, the reference illustrates that the amounts of the zinc oxide and bismuth oxide within a powder composition are result effective variables as the amount of bismuth oxide will affect the firing temperature and the zinc oxide will affect the

compactness and insulating resistance of the powder (0060, 0063). From this, it is the examiner's position that although the specific composition taught in the reference does not quite meet the limitations as claimed for zinc oxide and bismuth oxide within the above composition, one would recognize that the materials are capable of being present in a composition with the applicants' values and that if one desired to adjust the firing temperature, compactness, etc. of the powder, they would know that the amounts of the zinc oxide and bismuth oxide can be optimized to any amount within said preferable broad ranges (4-40wt% and 10-85wt%) in order to obtain desired results. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Mitsui et al. to include that the specific composition taught in the reference can have the amount of zinc oxide and bismuth oxide optimized to any amount in between the broad taught values (4-40wt% zinc oxide and 10-85 wt%), including being present in an amount between 26-40 wt% zinc oxide and 10-30 wt% bismuth oxide which is in the applicants' claimed amounts, in order to obtain desired levels of firing and compactness for the powder provided in the example. Therefore, the modified composition within the example would comprise the all the applicants' materials, other than RO, present at the claimed amounts.

Consider the RO compound according to the applicants' claim being within a mixture of all of the above compounds within the percentage range claimed

Although Mitsui et al. does not disclose that the specific composition which now as modified includes boron oxide, silica, zinc oxide, alumina, and bismuth oxide within the applicants amount ranges wherein PbO does not have to be present, the examiner

notes that as illustrated in the reference Mitsui et al. desires to produce the glass powder dielectric paste to have a softening point of 600 degrees Celsius or less so that high sintering temperatures are not needed (0056).

Mito et al. teach a lead free glass powder composition used in flat panel displays (title, abstract) which can be in the form of a dielectric paste (abstract, Col. 1, lines 6-11). They teach that it is desirable for the glass powder to have a softening point of 630 degrees Celsius or less (abstract) and more preferable 600 degrees Celsius or less (Col. 5, lines 19-24) and that BaO can be used to lower the heat resistant temperature and make the softening point possible (Col. 2, lines 37-44) and that the barium oxide works with zinc oxide, boron oxide and silica within the composition to provide for a dielectric paste to be efficient for the above display panel purpose (abstract, Col. 2, lines 37-64).

Mitsui et al. and Mito et al. disclose analogous art related to a dielectric glass powder paste used for display panels wherein the paste preferable has a softening point of 600 degrees Celsius or less. While Mitsui et al. discusses that the bismuth oxide works with the other materials within the composition to lowing the softening point, it is the examiner's position that if one of ordinary skill desired to further lower the softening point temperature or have aid in doing so, they would look to the prior art for suitable materials that would be able to be added to a composition such as the one above and have the desired affect of lowing said softening point therein and during the addition, they would know that as illustrated in Mito et al., the amount of BaO is a result effective variable and therefore, one would recognize that depending on desired results such as

the degree of further softening, etc. they would know that the amount of BaO can be optimized to any amount until the desired property is obtained.

Also, it is the examiner's position that one would recognize that if an additional material was to be added for the same purpose of the bismuth oxide, due to bismuth oxide working with specifically the silica, zinc oxide and boron oxide to allow for efficient properties for a dielectric paste for a display panel (0060-0063), it would be advantageous for the additional material to be able to work with the main materials of silica, zinc oxide, and boron oxide therein. As such, since Mito et al. teach that BaO can lower softening points while working with silica, boron oxide and zinc oxide in the same type of lead free dielectric paste composition for display panels as provided in Mitsui et al., it is the examiner's position that it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Mitsui et al. to include that BaO could be added to the specific composition taught in Mitsui et al. in order to obtain further aid in lowering the softening point of the dielectric paste and as discussed, it would also be obvious to modify Mitsui et al. to include that the amount of BaO can be optimized to any amount including the applicants' wt % in order to obtain any further softening point desired **(Claim 1)**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being obvious over Mitsui et al. (US Pub. 2003/0129546) and Mito et al. (US PN. 6,589,894) as applied to claim 1 above, in view of Kosaka et al. (US PN. 6,207,268).

Consider claim 2: As discussed above, Mitsui et al. was modified to include the limitations of claim 1. However, Mitsui et al. is silent regarding a protective layer formed over the dielectric layer wherein the protective layer has MgO as its main component.

Kosaka et al. teach a transfer sheet for forming dielectric layers and forming plasma display panels (abstract). The reference teaches that the plasma display panel can be comprised of an electrode with the dielectric layer applied thereon and then a protective layer comprised of MgO applied on the dielectric layer (Col. 8, lines 53-67). The reference teaches that the dielectric layer is also considered an ink layer (Col. 9, lines 63-68) and the protective layer is used to prevent damage to the dielectric ink layer (Col. 12, lines 11-15).

Mitsui et al. and Kosaka et al. disclose analogous art related to plasma display panels comprising an electrode and a dielectric layer disposed on the electrode. As such, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Mitsui et al. to include the protective layer comprised of MgO form Kosaka et al. in order to prevent damage to the dielectric layer **(Claim 2)**.

Consider claim 3: Mitsui et al. also teaches that the glass dielectric layer is cured at a temperature range of 140 to 300 degrees Celsius (0076) and heated at a temperature range in between room temperature (~20 to 23.5) and 500 degrees Celsius (0081). The reference also teaches that the glass powders used in the above layer are cured/heated

at the above temperatures have a linear thermal expansion coefficient of $75X10^{-7}/C^{o}$ (0105-0108). Due to this teaching and the above modifications, Mitsui et al.'s teaching now corresponds to applicants' claim 3 **(Claim 3)**.

Consider claim 4: The examiner notes that claim 4 is a product-by-process claim and according to the MPEP 2113 [R-1], the claim may be limited by and defined by the process, by the determination of patentability is based on the product itself and not its method of production. Therefore, if the product in the claim is the same as or an obvious variant over a product in the prior art although they might be made by different processes, the claim is unpatentable.

In the instant case, the reference teaches that the dielectric layer comprised of the glass powders discussed previously, is also comprised of a binder resin (0086) and can be comprised of an organic solvent (0073). The dielectric layer is formed on the electrode as also mentioned previously wherein the dielectric layer (Represented by "2" in Fig. 2) covers the electrodes (Represented as "1" in Fig. 2) and the layer is then baked by curing (0076), heating and firing (0081). Due to this teaching and the modified teaching of Mitsui et al., the reference now correspond to applicants' claim 4 **(Claim 4)**.

Response to Arguments

Applicant's arguments see Pg. 2 of their remarks, filed May 5, 2008, with respect to the 102 (b) rejection of claim 1 using the teaching of Mitsui et al.. The applicants' argue that the reference merely discloses compositions using silica, bismuth oxide, boron oxide and zinc oxide in a wide variety of ranges but does not disclose a specific composition with the applicants' amounts wherein the other necessary materials of the

claim are present. This is persuasive because in the reference they merely illustrate that when the materials of zinc oxide, silica, boron oxide and bismuth oxide are used in any composition, they can be present in the broad ranges of Table 3 and while the specific examples therein have can have all the above materials therein together, there is no example or teaching that the above materials can be present all together with an RO material wherein they are all together in the claimed ranges.

As such, the 102 (b) rejection of Claim 1 has been withdrawn and therefore, this action is made **Non-Final**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAUREN ROBINSON whose telephone number is (571)270-3474. The examiner can normally be reached on Monday to Thursday 6am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-2721284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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